



## FIGURE 1B



3090 3100 3110 3120 3130

3140	3150	3160	3170	3180	3190	
*	*	*	*	*	*	
CCC	GCG	CTG	CGG	CTG	CGC	GAG
Pro	Ala	Leu	Arg	Leu	Val	Lys
a	a	a	a	a	a	>

**3200**      **3210**      **3220**      **3230**      **3240**      **3250**

CCG CCC GGG CAG GTC ACG CGG CTC CGC GCC CTG CCC CTG ACC CAA GGG CAG CTG GTT  
 Pro Pro Gly Gln Val Thr Arg Leu Arg Ala Leu Pro Leu Thr Gln Gly Gln Leu Val>  
a a a a a a a ORF RF[1] a a a a a a a >

3260 3270 3280 3290 3300

3310 3320 3330 3340 3350 3360

3370 3380 3390 3400 3410 3420

**3430**      **3440**      **3450**      **3460**      **3470**      **3480**

CTG GAC TAC TGG GCC CGA CCA GGC CCC TTC TCG GAC CCT GTG CCG TAC CTG GAG GTC  
 Leu Asp Tyr Trp Ala Arg Pro Gly Pro Phe Ser Asp Pro Val Pro Tyr Leu Glu Val>  
 a a a a a a ORF RF[1] a a a a a a a a >

3490 3500 3510 3520 3530 3540

CCT GTG CCA AGA GGG CCC CCA TCC CCG GGC AAT CCA TGAG CCTGTGCTGA GCCCCAGTGG  
Pro Val Pro Arg Gly Pro Pro Ser Pro Gly Asn Pro>  
a a a a ORF RF[1] a a a a >

3550 \* 3560 \* 3570 \* 3580 \* 3590 \* 3600 \* 3610 \*

ATGCGGCGCTG CGGCCCGCTG CGGCCCGCTG CGGCCCGCTG CGGCCCGCTG CGGCCCGCTG CGGCCCGCTG CGGCCCGCTG

2120 2120 2140 2140 2150 2150 2150

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FIGURE 1E

4810	4820	4830	4840	4850	4860	4870
*	*	*	*	*	*	*
CTGGTAACAG	GATTAGCAGA	GCGAGGTATG	TAGGCAGTGC	TACAGAGTTC	TTGAAGTGGT	GGCCTAACTA
4880	4890	4900	4910	4920	4930	4940
*	*	*	*	*	*	*
CGGCTACACT	AGAAGGACAG	TATTTGGTAT	CTGCAGCTCTG	CTGAAGCCAG	TTACCTTCGG	AAAAAGAGTT
4950	4960	4970	4980	4990	5000	5010
*	*	*	*	*	*	*
GGTAGCTCTT	GATCCGGCAA	ACAAACCACC	GCTGGTAGCG	GTGGTTTTTT	TGTTTGCAAG	CAGCAGATTA
5020	5030	5040	5050	5060	5070	5080
*	*	*	*	*	*	*
CGCGCAGAAA	AAAAGGATCT	CAAGAAGATC	CTTGATCTT	TTCTACGGGG	TCTGACGCTC	AGTGGAACGA
5090	5100	5110	5120	5130	5140	5150
*	*	*	*	*	*	*
AAACTCACGT	TAAGGGATT	TGGTCATGAG	ATTATCAGAA	AGGATCTTC	CCTAGATCCT	TTTAAATTAA
5160	5170	5180	5190	5200	5210	5220
*	*	*	*	*	*	*
AAATGAAGTT	TTAAATCAAT	CTAAAGTATA	TATGAGTAAA	CTTGGTCTGA	CAGTTACCAA	TGCTTAATCA
5230	5240	5250	5260	5270	5280	5290
*	*	*	*	*	*	*
GTGAGGCACC	TATCTCAGCG	ATCTGTCTAT	TTCGTTCATC	CATAGTTGCC	TGACTCCCCG	TCGTGTAGAT
5300	5310	5320	5330	5340	5350	5360
*	*	*	*	*	*	*
AACTACGATA	CGGGAGGGCT	TACCATCTGG	CCCCAGTGCT	GCAATGATAC	CGCGAGACCC	ACGCTCACCG
5370	5380	5390	5400	5410	5420	5430
*	*	*	*	*	*	*
GCTCCAGATT	TATCAGCAAT	AAACCAGCCA	GCCGGAAGGG	CCGAGCGCAG	AAGTGGTCCT	GCAACTTTAT
5440	5450	5460	5470	5480	5490	5500
*	*	*	*	*	*	*
CCGCCTCCAT	CCAGTCTATT	AATTGTTGCC	GGGAAGCTAG	AGTAAGTAGT	TCGCCAGTTA	ATAGTTGCCG
5510	5520	5530	5540	5550	5560	5570
*	*	*	*	*	*	*
CAACGTTGTT	GCCATTGCTA	CAGGCATCGT	GGTGTACCGC	TCGTGTTTG	GTATGGCTTC	ATTCAGCTCC
5580	5590	5600	5610	5620	5630	5640
*	*	*	*	*	*	*
GGTCCCCAAC	GATCAAGGCG	AGTTACATGA	TCCCCCATGT	TGTGCAAAAA	AGCGGTTAGC	TCCTTCGGTC
5650	5660	5670	5680	5690	5700	5710
*	*	*	*	*	*	*
CTCCGATCGT	TGTCAGAACT	AAGTTGGCCG	CAGTGTATC	ACTCATGGTT	ATGGCAGCAC	TGCATAATTC
5720	5730	5740	5750	5760	5770	5780
*	*	*	*	*	*	*
TCTTACTGTC	ATGCCATCCG	TAAGATGCTT	TTCTGTGACT	GGTGAGTACT	CAACCAAGTC	ATTCTGAGAA
5790	5800	5810	5820	5830	5840	5850
*	*	*	*	*	*	*
TAGTGTATGC	GGCGACCGAG	TTGCTCTTGC	CCGGCGTCAA	TACGGGATAA	TACCGCGCCA	CATAGCAGAA
5860	5870	5880	5890	5900	5910	5920
*	*	*	*	*	*	*

FIGURE 1F

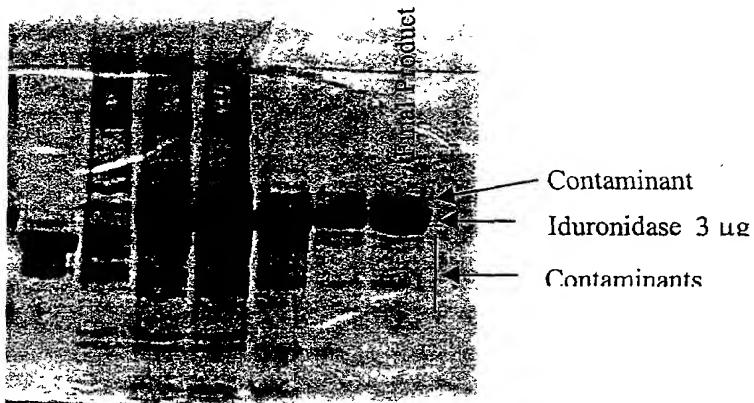
CTTTAAAAGT	GCTCATCATT	GGAAAACGTT	CTTCGGGGCG	AAAACTCTCA	AGGATCTTAC	CGCTGTTGAG
5930	5940	5950	5960	5970	5980	5990
*	*	*	*	*	*	*
ATCCAGTTCG	ATGTAACCCA	CTCGTGCACC	CAACTGATCT	TCAGCATCTT	TTACTTTAC	CAGCGTTCT
6000	6010	6020	6030	6040	6050	6060
*	*	*	*	*	*	*
GGGTGAGCAA	AAACAGGAAG	GCAAAATGCC	GCAAAAAAAGG	GAATAAGGGC	GACACGGAAA	TGTTGAATAC
6070	6080	6090	6100	6110	6120	6130
*	*	*	*	*	*	*
TCATACTCTT	CCTTTTCAAA	TATTATTGAA	GCATTTATCA	GGGTTATTGT	CTCATGAGCG	GATACATATT
6140	6150	6160	6170	6180	6190	6200
*	*	*	*	*	*	*
TGAATGTATT	TAGAAAAATA	AACAAATAGG	GGTTCCGCGC	ACATTTCCCC	GAAAAGTGC	ACCTGACGTC

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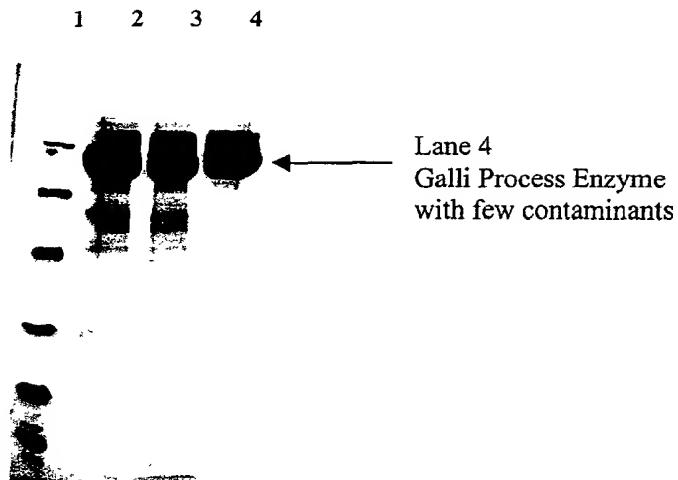
### FIGURE 1G

**FIGURE 2. SDS-POLYACRYLAMIDE GELS DEMONSTRATING IMPROVEMENTS IN PURITY**

Gel using the Kakkis et al 1994, published procedure for purification



Gel using the new Galli Process contained in this application



1. Molecular Weight Marker
2. Prior Process Carson (nonpublished) Batch 2000C9001 Reference Reduced (7.5  $\mu$ g)
3. Same Batch 2000C9001 Reference Reduced (5.0  $\mu$ g)
4. Galli Process Enzyme Batch P10006 (5.0  $\mu$ g)

**FIGURE 2**

FIGURE 3A IDURONIDASE PRODUCTION USING THE GALLI PROCESS

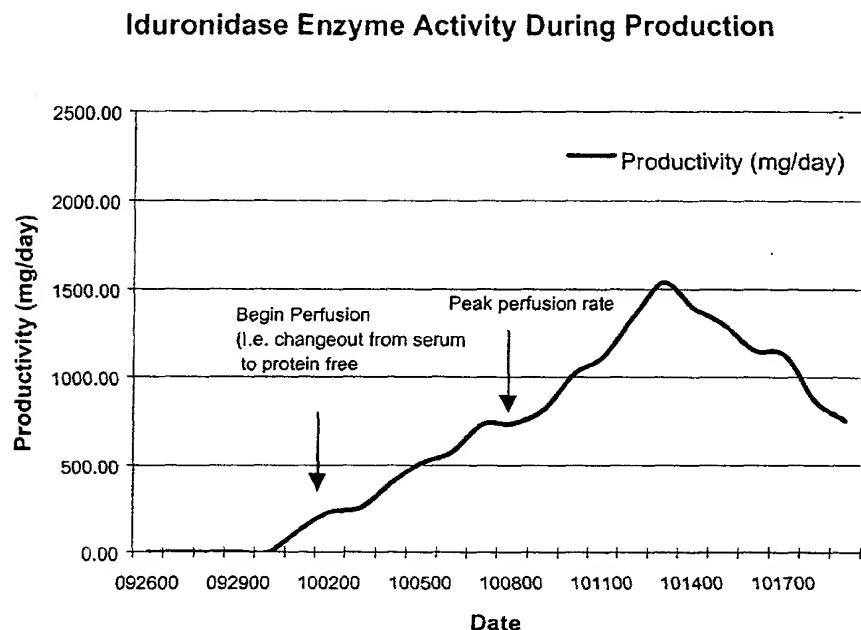
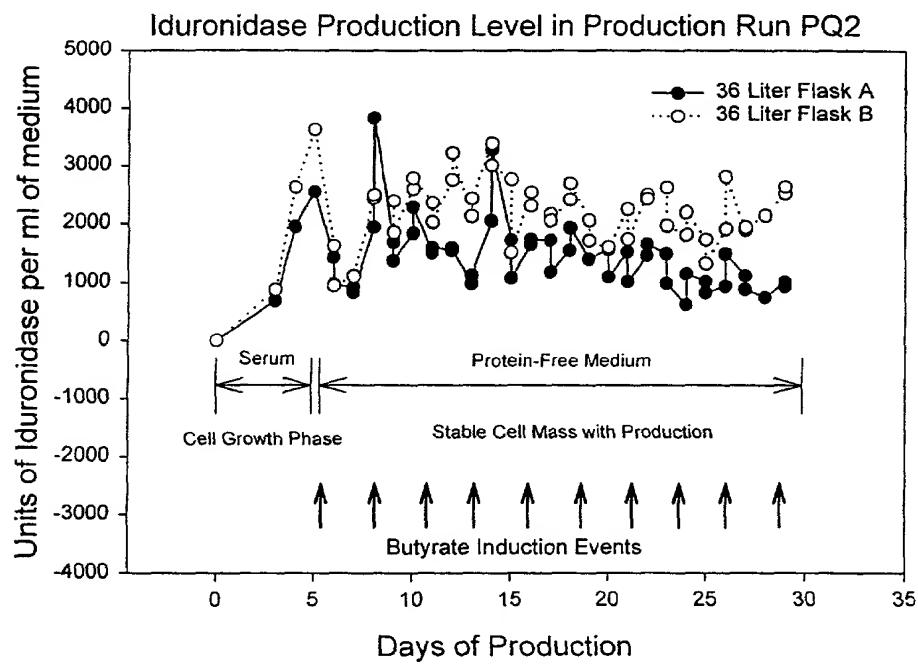
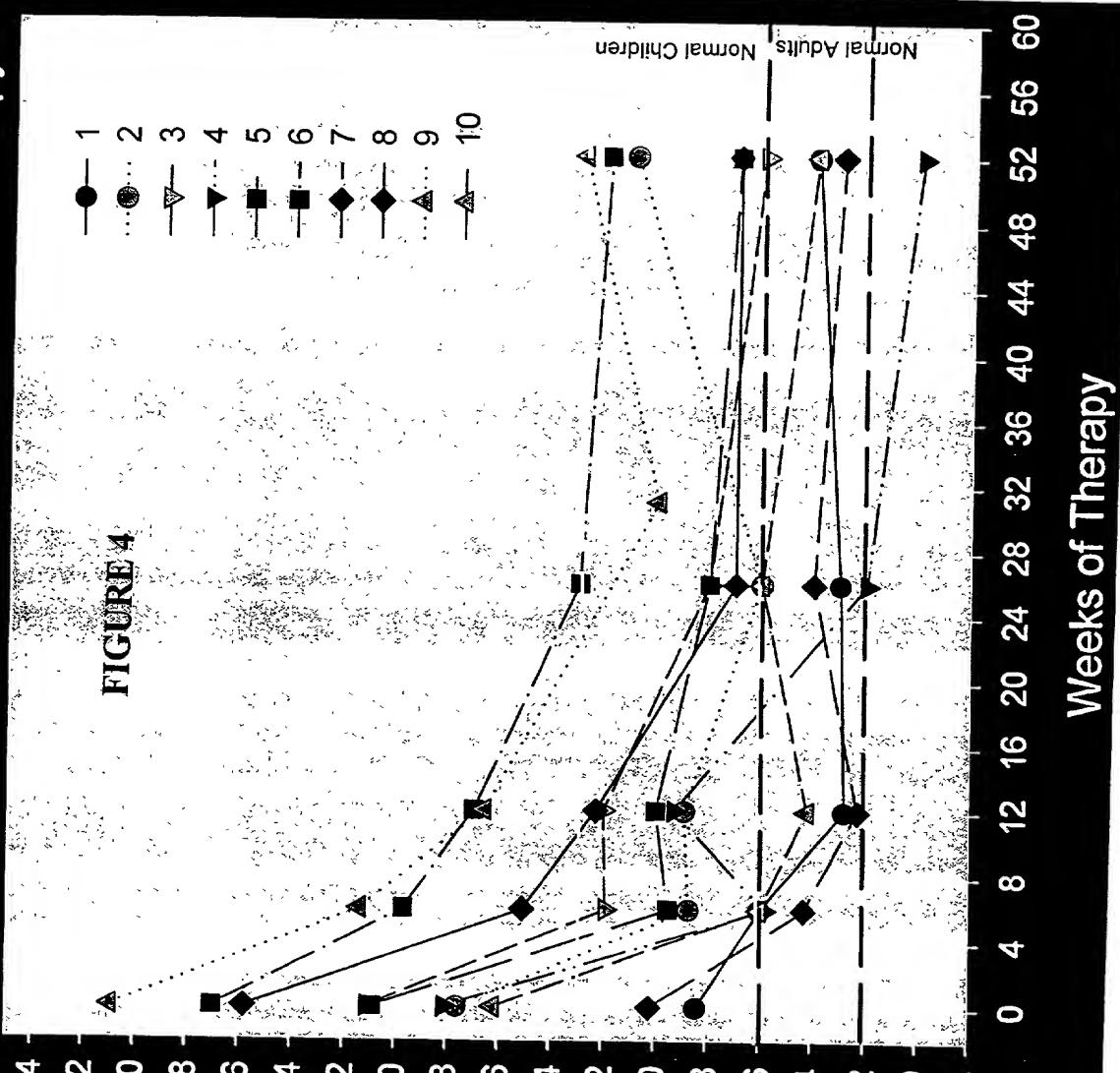


FIGURE 3B. IDURONIDASE PRODUCTION USING BUTYRATE INDUCTION



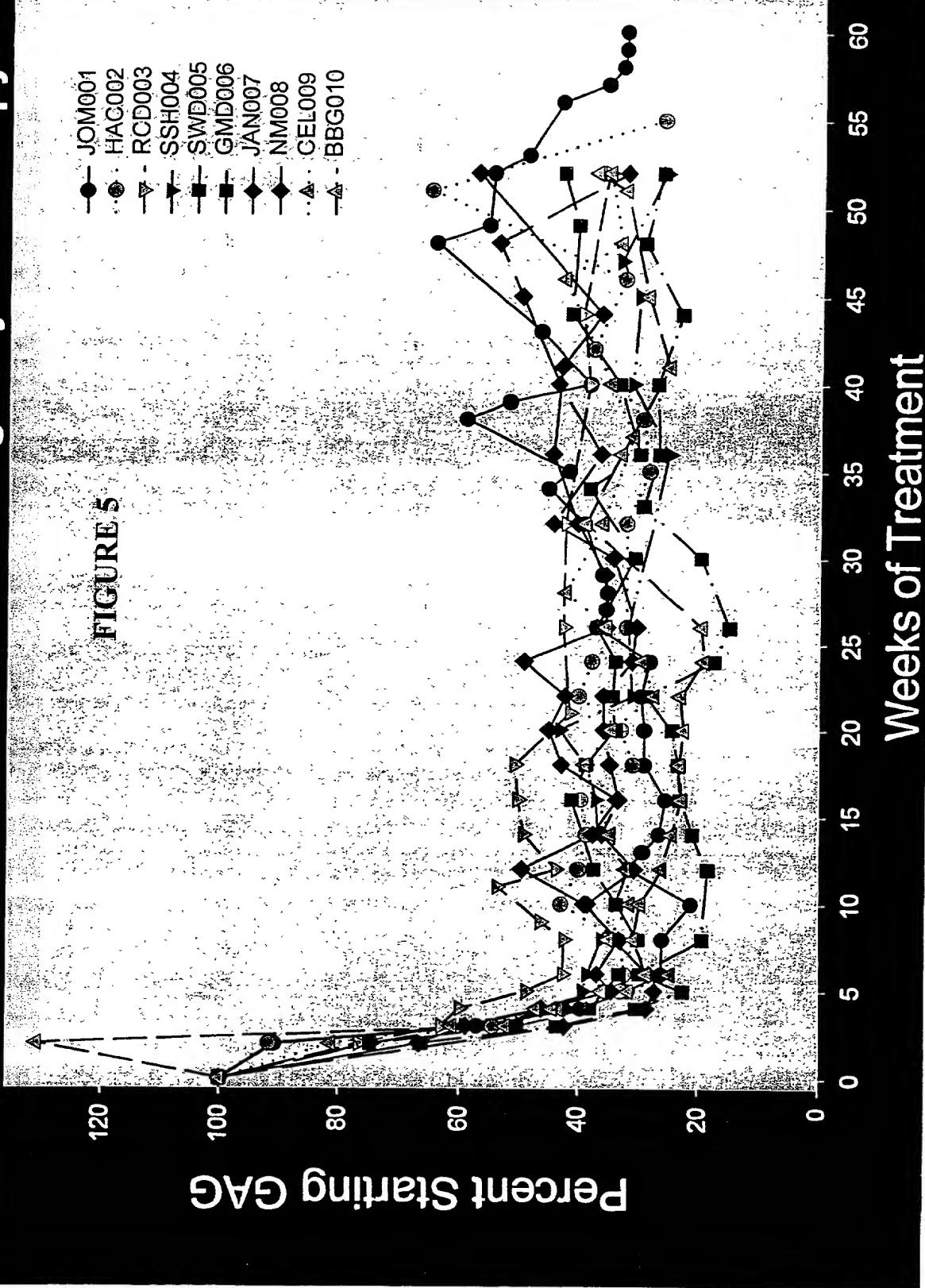
## Reduction in Liver Volume During Enzyme Therapy



**FIGURE 4**

# Urinary GAG Excretion During Enzyme Therapy

FIGURE 5



## Elbow and Knee Extension in HAC002

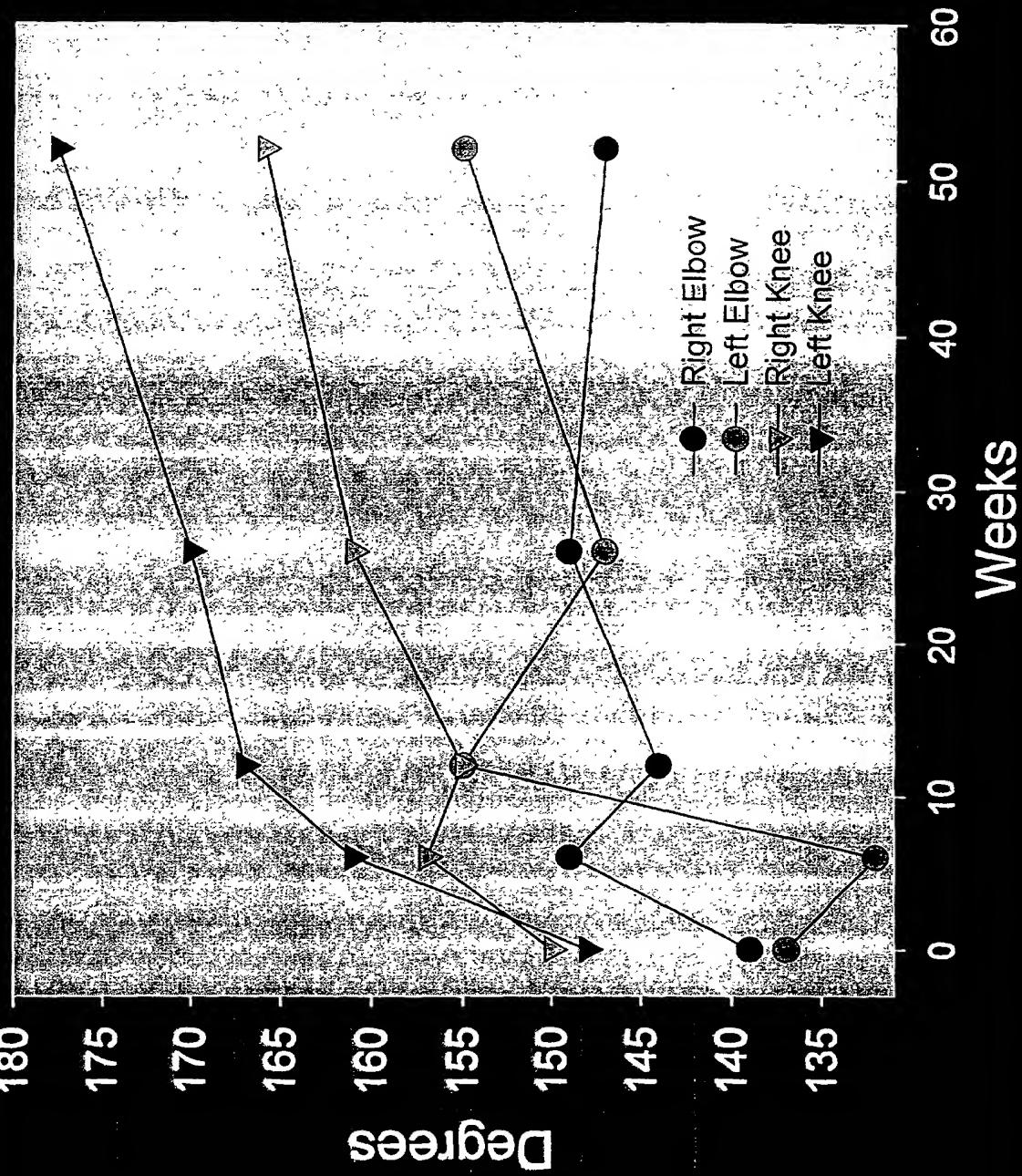


FIGURE 6

## Shoulder flexion to 104 weeks in four patients with most restriction

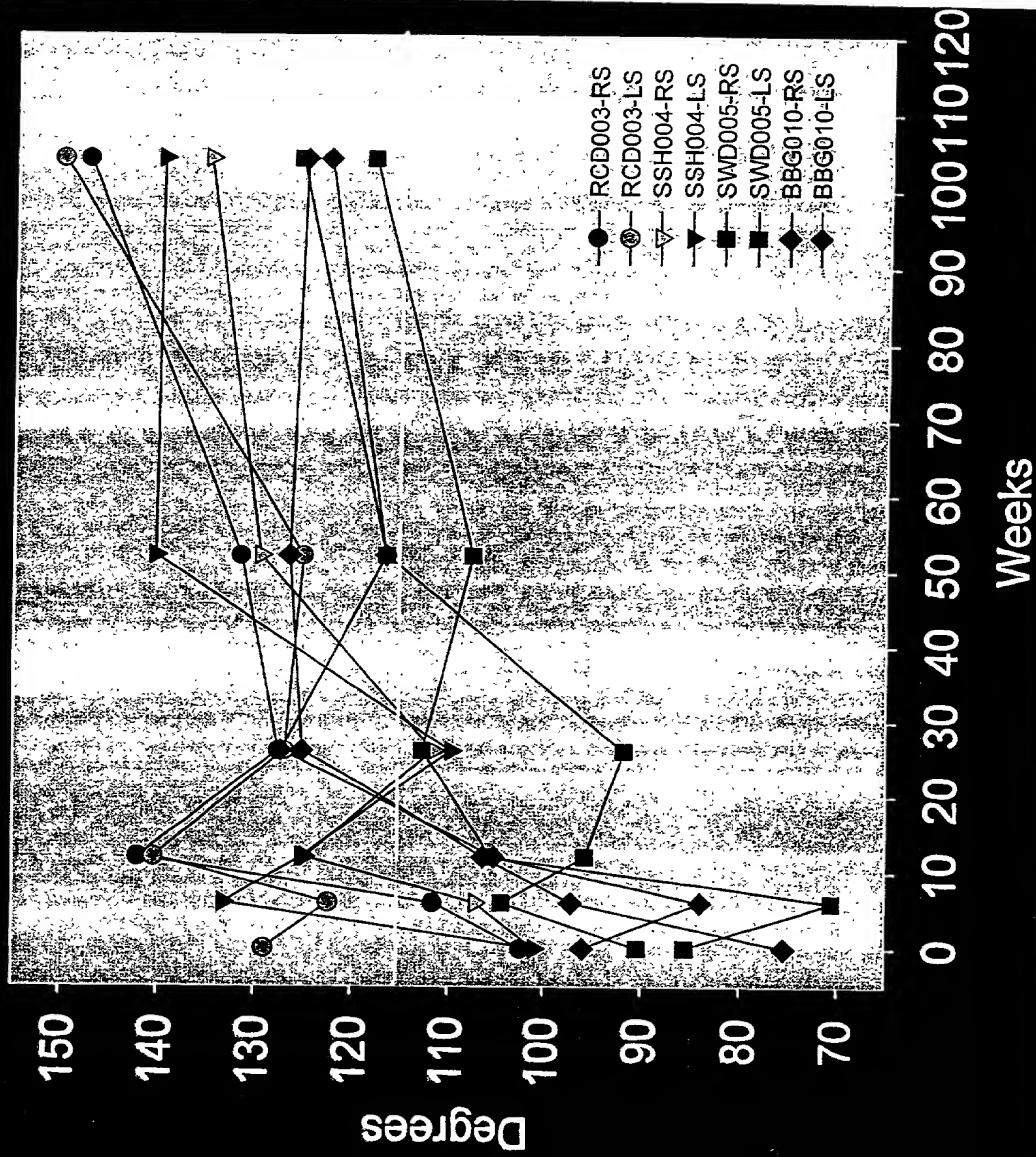


FIGURE 7

# Sleep Apnea Improves

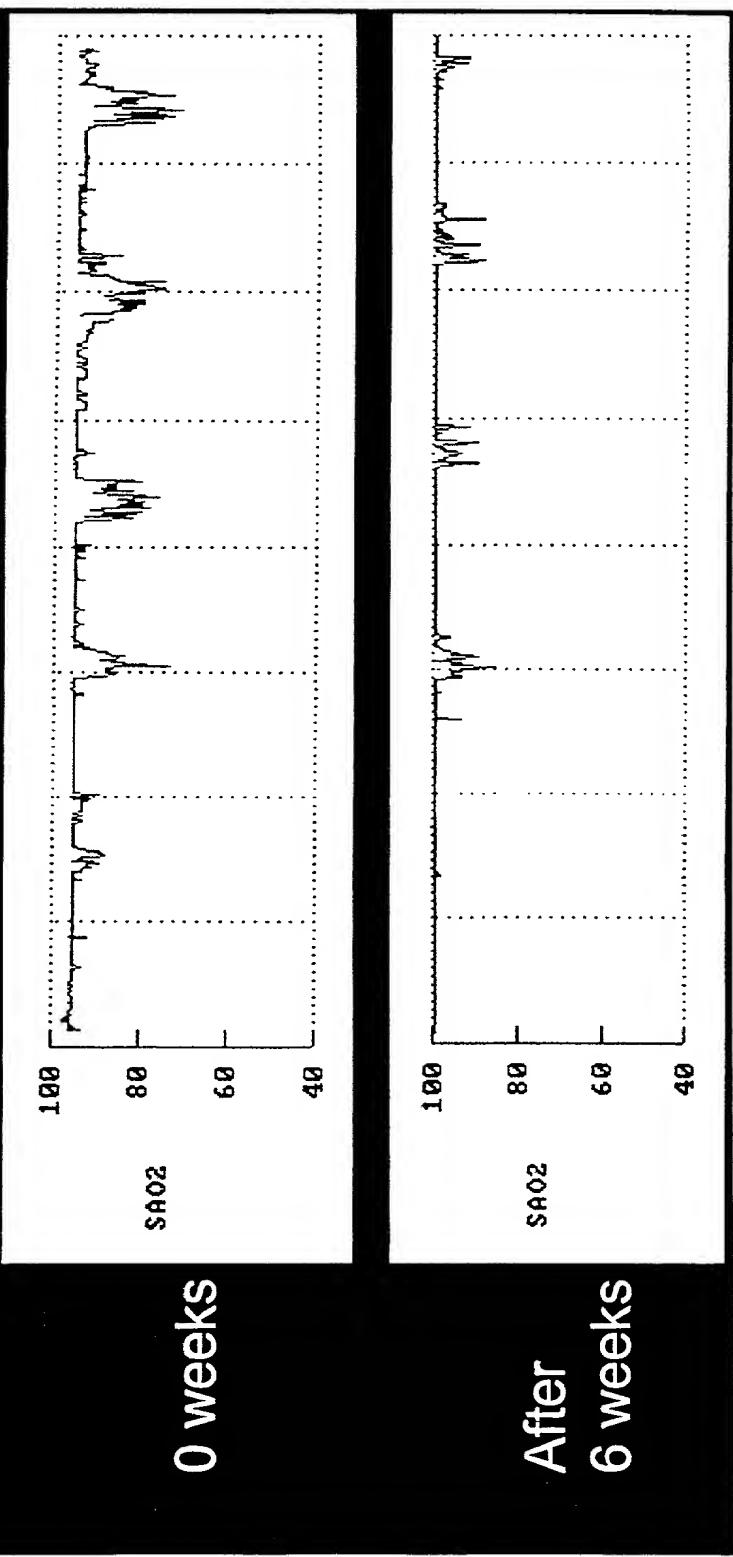


FIGURE 8

# Apneas + Hypopneas During Sleep Pre and Post Treatment

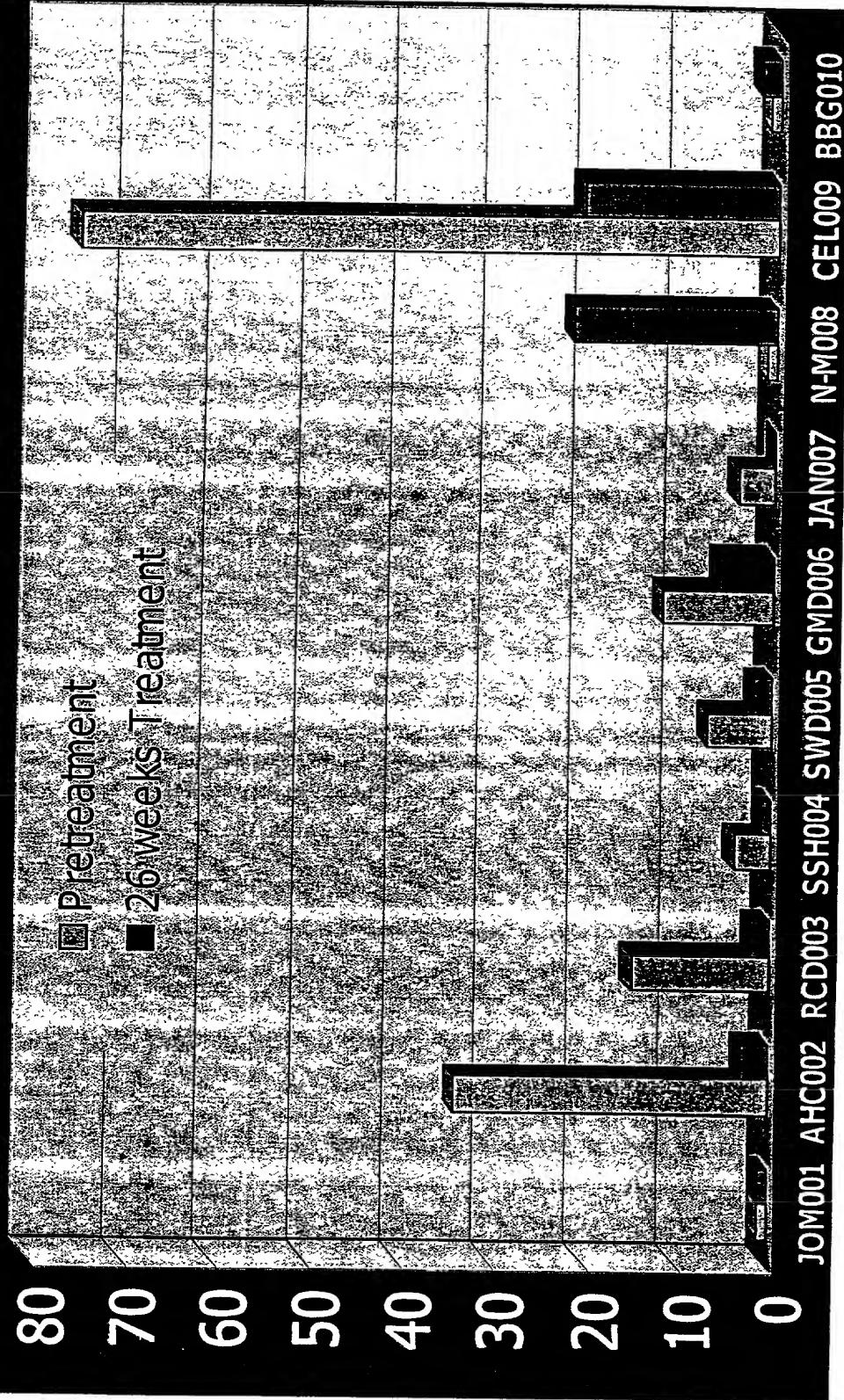


FIGURE 9

## Pulmonary Function Tests in GMD006

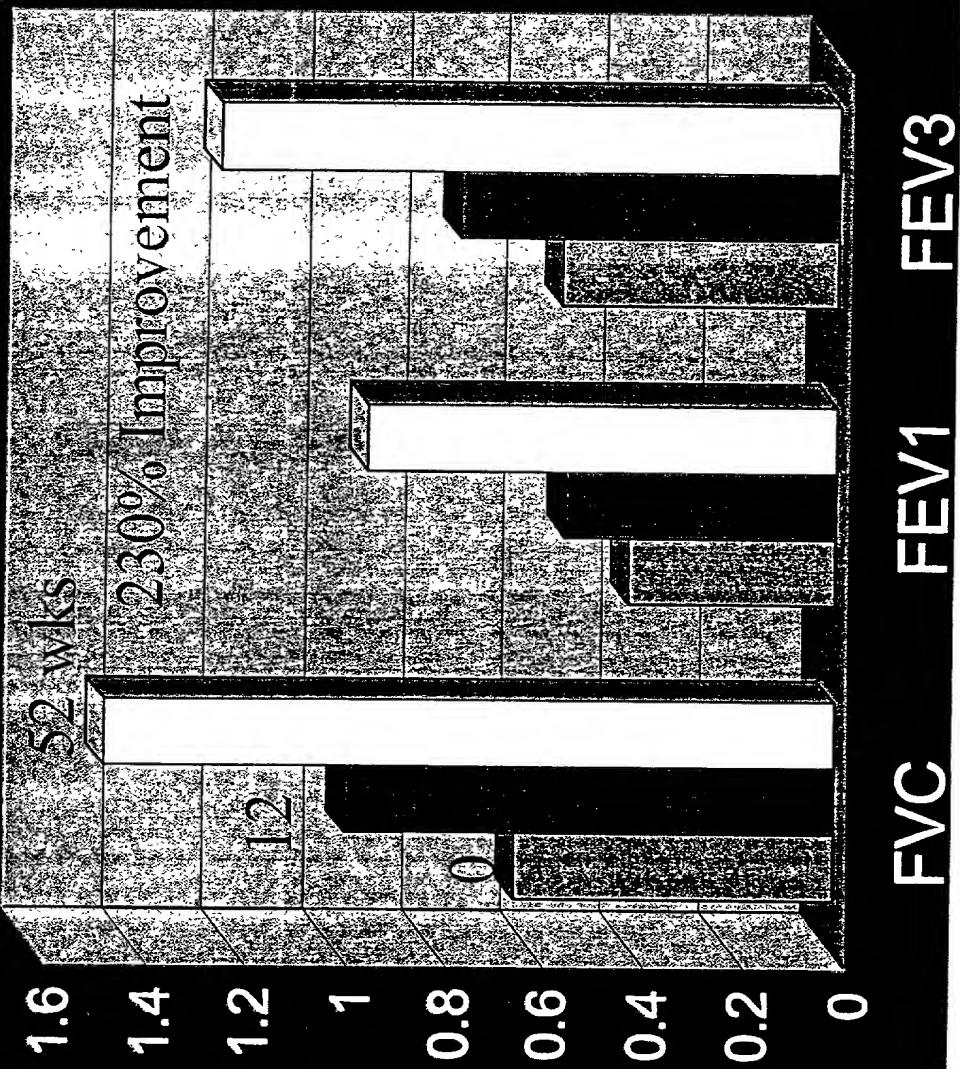


FIGURE 10

# Increased Height Growth Velocity

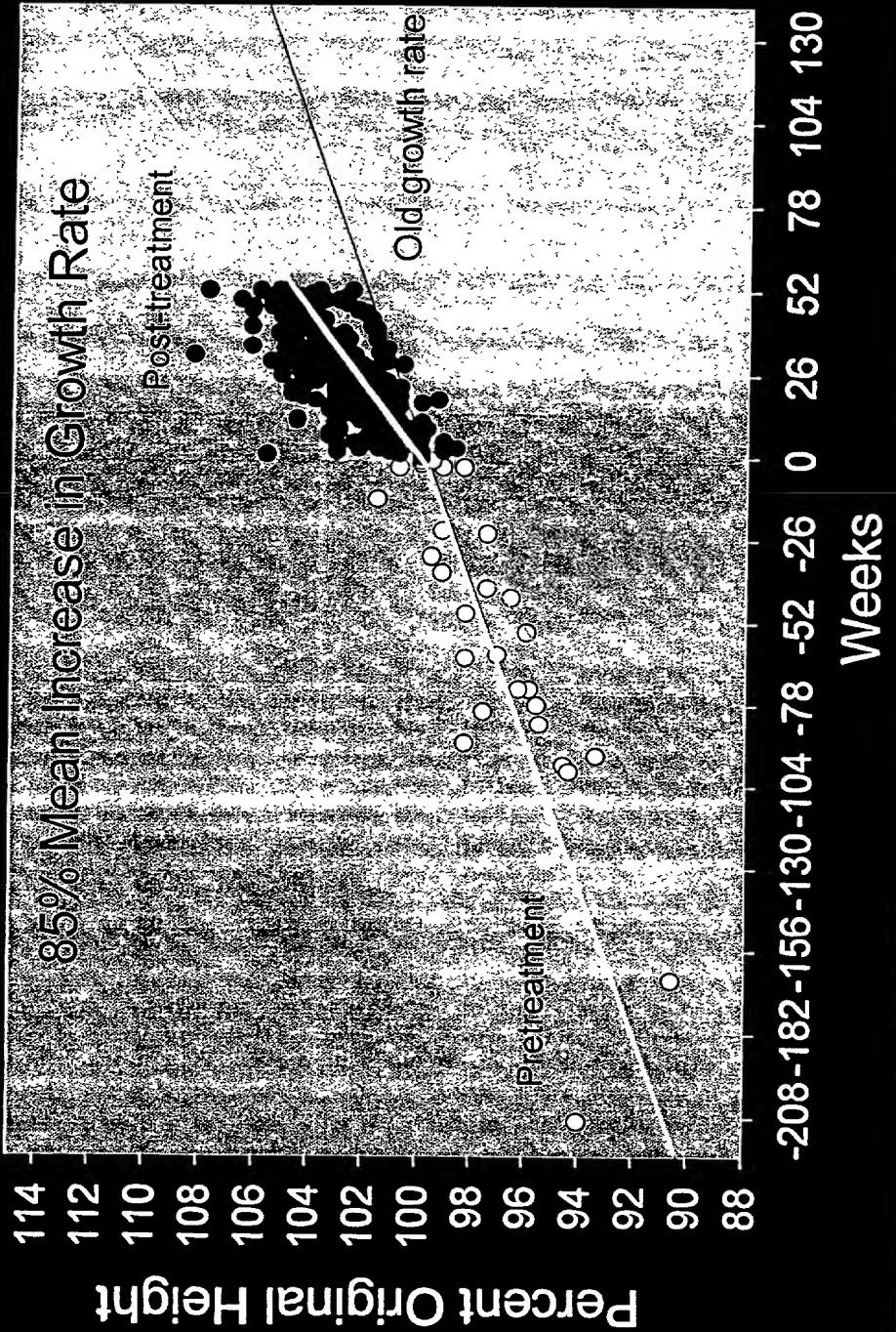


FIGURE 11

**FIGURE 12.**

**COMPARISON OF HOST PROTEIN CONTAMINATION BETWEEN A PRIOR AND THE NEW GALLI PROCESS**

**Chinese Hamster Ovary Host Protein Contamination by ELISA Assay**

SOURCE AND BATCH NUMBER	CHOP PROTEIN CONTAMINATION (microgram per milligram)	PERCENT CHOP CONTAMINATION	PURITY OF THE ENZYME FROM CHOP
Prior Process (Carson/REI)			
C9002	14	1.4%	98.6%
C9003	24	2.4%	97.6%
C9004	16	1.6%	98.4%
New Process (Galli)			
P1003	<1.3	<0.13%	>99.9%
P1006	1.2	0.12%	99.9%
P1007	<0.6	<0.06%	>99.9%
P1008	<0.67	<0.067%	>99.9%

**FIGURE 12**

### Comparison of Galli and Carson Material

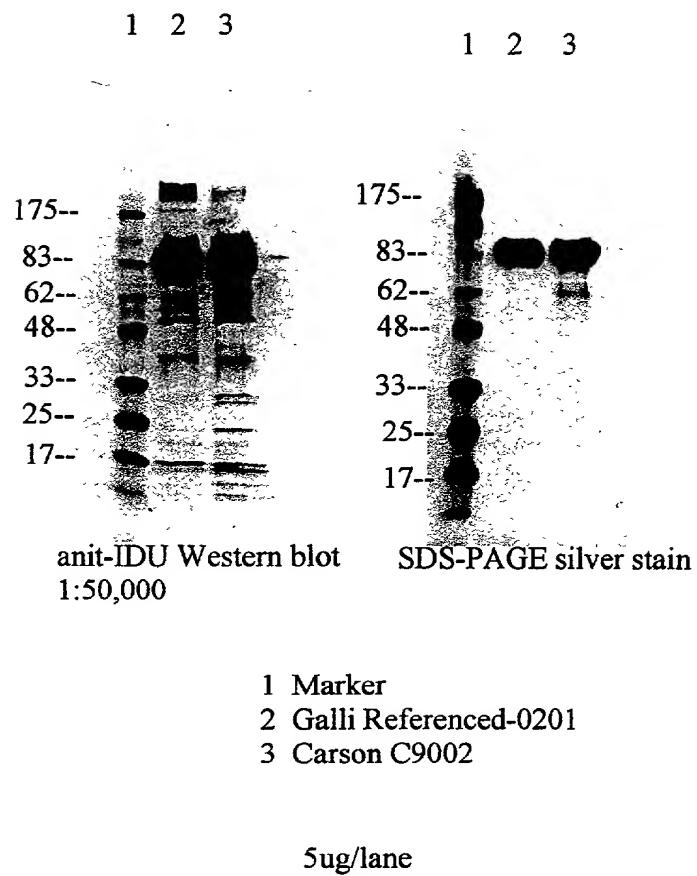


FIGURE 13